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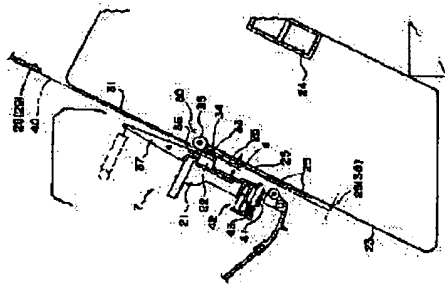
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(21)Application number : 10-339524 (71)Applicant : SEIKO EPSON CORP
(22)Date of filing : 30.11.1998 (72)Inventor : MIYAZAKI KENICHI

(54) LARGE PRINTER

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a large printer having a slant paper transfer path which facilitates registering of a leading end of a paper necessary when printing on the paper.

SOLUTION: In the large printer, a paper feed part, a printing part 7 and a delivered paper stack part are arranged in a positional relationship of upper, middle and lower positions. A paper transfer path running from the paper feed part through the printing part to the delivered paper stack part is formed nearly straight from a diagonally upper depth to a diagonally lower front of the printer. A sucking means 25 for sucking a paper from a rear face and limiting the paper not to separate from a transfer face is set to the paper transfer face at the downstream side of a printing head 22 of the paper transfer path. When a leading end of the paper is inserted from diagonally above to the paper transfer path of the slant structure and passed through a print area of the printing part for registration, the leading end side of the paper is held by the sucking means 25 tightly in a flat state to the position, and therefore can be registered easily.



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CLAIMS

[Claim(s)]

[Claim 1] The feed section, the printing section, and the delivery stack section are arranged at the physical relationship of the upper inside and the bottom. In the large-sized printer by which the form conveyance path of going to the aforementioned delivery stack section through the aforementioned printing section from the aforementioned feed section is formed in the rear side of a slanting lower part almost straightly from the upper slanting back side. The large-sized printer characterized by preparing a suction means to suppress that attract a form from a tooth back and a form separates from a conveyance side in the form conveyance side in the downstream of the print head of the aforementioned form conveyance path.

[Claim 2] It is the large-sized printer characterized by, as for the ejection roller arranged in the upstream of the print head of the aforementioned form conveyance path, forming a follower roller possible [attachment and detachment] relatively to a drive roller in a claim 1, and forming the alignment at the nose of cam of a form so that it may be carried out, after both the aforementioned rollers have separated.

[Claim 3] It is the large-sized printer characterized by for a suction means making a small suction mouth a unit, putting it in order in a claim 1 or 2, and being constituted.

[Claim 4] It is the large-sized printer characterized by the lowest style position of the suction field of the aforementioned suction means serving as the horizontal line for the nose-of-cam alignment of a form in either of the claims 1-3.

[Claim 5] It is the large-sized printer characterized by the maximum side edge position of the suction field of the aforementioned suction means serving as the vertical line for the lengthwise alignment of a form in a claim 4.

[Claim 6] It is the large-sized printer which be form in back possible [suspension] through the front face and the upper surface of the aforementioned feed section from the portion in which the single part sheet with the aforementioned large-sized form conveyance path be prepared in the aforementioned suction means in either of the claims 1-5, and be characterize by be constitute so that this nose of cam alignment of a single part sheet large-sized in the state of suspension can be perform.

[Claim 7] It is the large-sized printer characterized by constituting the aforementioned feed section possible [feeding of a roll sheet other than a single part sheet] in either of the claims 1-6.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the large-sized printer which uses a roll sheet, especially the large-sized printer constituted so that the delivery roller in the printing section might be lost.

[0002]

[Description of the Prior Art] As a large-sized printer for printing in the large-sized printer which uses a roll sheet, especially a large-sized form with a width of face of 420mm or more. The feed section, the printing section, and the delivery stack section have been arranged at the physical relationship of the upper inside and the bottom, and the applicant for this patent applied for that by which the form conveyance path of going to the aforementioned delivery stack section through the aforementioned printing section from the aforementioned feed section is formed almost straightly in the near side of a slanting lower part from the upper slanting back side previously.

[0003]

[Problem(s) to be Solved by the Invention] By the large-sized printer of the above-mentioned slanting structure, when a form conveyance path prints in the above large-sized forms, first, it needs to insert the nose of cam of the form in a form conveyance path from the slanting upper part, needs to pass the printing area of the printing section, and needs to carry out alignment at the nose of cam of a form.

[0004] A form conveyance path is the large-sized printer of slanting structure, and the technical problem of this invention is to offer the large-sized printer which can perform easily alignment at the required nose of cam of a form, when printing in a form.

[0005]

[Means for Solving the Problem] In order to attain the above-mentioned technical problem, invention of a publication to this application claim 1. The feed section, the printing section, and the delivery stack section are arranged at the physical relationship of the upper inside and the bottom. In the large-sized printer by which the form conveyance path of going to the aforementioned delivery stack section through the aforementioned printing section from the aforementioned feed section is formed in the near side of a slanting lower part almost straightly from the upper slanting back side it is characterized by preparing a suction means to suppress that attract a form from a tooth back and a form separates from a conveyance side in the form conveyance side in the downstream of the print head of the aforementioned form conveyance path.

[0006] Since a form nose-of-cam side is firmly held in the state flat in the position by the aforementioned suction means in case according to this invention a form conveyance path inserts the nose of cam of a form in a form conveyance path from the slanting upper part, passes the printing area of the printing section and carries out alignment at the nose of cam of a form by the large-sized printer of slanting structure, the nose-of-cam alignment can be performed easily. Although it will bend if the posture of a form is not held especially compulsorily in the case of a form with the weak waist (single part sheet especially with the weak waist), and

alignment is difficult, since a form with such the weak waist is also held firmly, according to the invention in this application, the alignment can be performed easily.

[0007] Moreover, it is characterized by, as for the ejection roller arranged in this application claim 2 by the upstream of the print head of the aforementioned form conveyance path in the large-sized printer by which invention of a publication was indicated by the claim 1, forming a follower roller possible [the attachment-and-detachment possibility of, i.e., a release,] relatively to a drive roller, and forming the alignment at the nose of cam of a form so that both the aforementioned rollers may be performed in the state of the left release.

[0008] Although it is the case of a single part sheet since the form concerned is held by the aforementioned suction means in the position after inserting while being easy to insert a form since the aforementioned ejection roller can be performed in the state of a release in case according to this invention the nose of cam of a form is inserted in a form conveyance path from the slanting upper part and the printing area of the printing section is passed especially, there is no possibility of falling carelessly from the form conveyance path of slanting structure.

Furthermore, it much more becomes easy to carry out alignment at the nose of cam of a form.

[0009] Moreover, as for a suction means, invention given in this application claim 3 is characterized by putting it in order and being constituted by making a small suction mouth into a unit in the large-sized printer indicated by a claim 1 or 2, according to this invention -- structure -- it can simplify and the suction section of a suction means can be formed

[0010] Moreover, invention given in this application claim 4 is characterized by the lowest style position of the suction field of the aforementioned suction means serving as the horizontal line for the nose-of-cam alignment of a form in the large-sized printer indicated by either of the claims 1-3. Attitude control is carried out evenly, without coming floating to the tip of a form, since the horizontal line used as the criteria of the alignment at the nose of cam of a form has suction capacity according to this invention, and precise alignment is possible.

[0011] Moreover, invention given in this application claim 5 is characterized by the maximum side edge position of the suction field of the aforementioned suction means serving as the vertical line for the lengthwise alignment of a form in the large-sized printer indicated by the claim 4, and is --. According to this invention, precise alignment can be easily performed by the vertical line concerned about the side of a form as well as the aforementioned horizontal line.

[0012] moreover, it be characterize by to be constitute so that the aforementioned form

conveyance path may be form in back possible [suspension] through the front face and the upper surface of the aforementioned feed section in the large-sized printer indicated by either of the claims 1-5 from the portion in which the large-sized single part sheet be prepared in the aforementioned suction means and invention given in this application claim 6 may perform this nose of cam alignment of a single part sheet large-sized in the state of suspension .

[0013] Although according to this invention the form must be first set to a printer when printing to a quite large-sized single part sheet, the set state can be easily set by changing into the aforementioned suspension state. And when carrying out alignment at the nose of cam of a form in the state of the set and it is going to return a form nose of cam to the upstream for a while, since [by which the aforementioned suspension portion is based on the self-weight] it pulls and the force is done, it can return by the light force. Moreover, since the total weight of a form is not moves at a stretch by operation of the aforementioned suspension portion at a downstream when moving a form nose of cam to a downstream conversely, it can be made to be able to move easily by the light force, it can have, and alignment can be performed easily.

[0014] Moreover, invention given in this application claim 7 is characterized by constituting the

aforementioned feed section possible [feeding of a roll sheet other than a single part sheet] in the large-sized printer indicated by either of the claims 1-6. According to this invention, by the suction means concerned, when carrying out nose-of-cam alignment of a roll sheet, since it is firmly held in the state with a form nose of cam flat in the position, the nose-of-cam alignment can be performed easily.

[0015]

[Embodiments of the Invention] Hereafter, the form of operation of the invention in this

application is explained based on a drawing. Drawing 1 is a drawing having shown the structure of

the conveyance side before and behind the printing section of the large-sized printer concerning the form of 1 operation of this invention, and the printing section which is in the form conveyance path correctly, drawing 2 is the outline front view of the large-sized printer concerned, and drawing 3 is outline drawing of longitudinal section of the large-sized printer concerned.

[0016] As the large-sized printer concerning the gestalt of this operation was shown in drawing 3, the feed section 30, the printing section 7, and the delivery stack section 8 are arranged at the physical relationship of the upper inside and the bottom. And the form conveyance path of going to the aforementioned delivery stack section 8 through the aforementioned printing section 7 from the aforementioned feed section 30 is formed in the rear side of a slanting lower part almost straightly from the upper slanting back side. The feed section 30 concerned can feed paper to both single part sheets 40 (drawing 1) containing a roll sheet 3 and rigid large-sized pasteboard. Specifically, as it is attached so that it can remove in the feed section 30 with two spindles 4 and 5 at the time of exchange, and the single part sheet 40 was shown in drawing 1, the roll sheet 3 is constituted so that it can set by laying using the slant face by the side of the front face of the feed section 30, the roll-sheet covering 28 formed in the front face of the roll sheet 3 with which it was equipped with the gestalt of this operation — the set state of the aforementioned single part sheet 40 — it is formed so that it may support and may serve as the section 29.

[0017] The printing section 7 has the flat feed guide 31 which acts as a form conveyance side in the upstream of the print head 22, and the flat delivery guide 23 which acts as a form conveyance side in a downstream while having the printing section which consists of the platen 33 (drawing 1) which countered the print head 22 of an ink-jet formula, and this, and has been arranged. With the form of this operation, the form conveyance side in the upstream of the print head 22 by this feed guide 31 and the form conveyance side in the downstream of the print head 22 by the delivery guide 23 are established with a level difference d (refer to drawing 1), and have level difference structure which the direction of the form conveyance side in the downstream of a print head 7 went down to the back side.

[0018] Based on drawing 1, the structure of the above-mentioned printing section 7 is explained in more detail. As for the form conveyance side in the upstream of the print head 22 by the above-mentioned feed guide 31, and the form conveyance side in the downstream of the print head 22 by the delivery guide 23, the level difference d is attached bordering on the platen 33. Namely, the form installation side of this platen 33 is determined by two or more ribs 34 which protruded on the upper surface of a platen 33, and, as for the level of the delivery guide 23, only the level difference d is lowered almost identically to this rib 34 to the back side by the level of the feed guide 31 from this.

[0019] And the suction mouth 25 which changes from two or more stomata opened for free passage by the suction room (not shown) to the delivery guide 23 in the downstream of a print head 22 can be formed, a form 40 can be attracted from a tooth-back side through this suction mouth 25 with the suction force by the suction fan 24, the relief of a form can be stopped, and it can change into a flat state, and can hold now to a form conveyance side firmly. It is arranged and formed in a longitudinal direction, a predetermined interval is opened with the gestalt of this operation, and this suction mouth 25 is 5 successive-installation eclipse ***** to width. This suction mouth 25 constitutes a suction means with the above-mentioned suction room and the suction fan 24.

[0020] It was shown in drawing 1 — as — the pair of a print head 22 and a platen 33 — immediately, the feed roller 50 is arranged, and while this consists of the pair of the drive roller 35 and the follower roller 36, the follower roller 36 is formed in the upstream possible [attachment and detachment] by the rotation lever 37 This attachment-and-detachment mechanism is needed for making here (release state) easy to separate the follower roller 36 from the feed roller 35, and to pass through here, in case alignment of the form is carried out. That is, the nose-of-cam alignment of a form inserts the nose of cam of a form 40 in a form conveyance path from the slanting upper part, passes the printing area (under a print head 22) of the printing section 7, and it is formed so that it may be carried out by doubling this form nose of cam by the

horizontal line 38 as a set mark on the delivery guide 23. Here, the horizontal line 38 is the thing of the lowest style position of the train of the suction mouth 25 which constitutes a suction means, and is made to serve a double purpose (refer to drawing 1 and drawing 2). Furthermore, as shown in drawing 2, the vertical line 39 for the lengthwise alignment of a form 40 is the thing of the maximum side edge position (the gestalt of this operation right-hand side edge) of the suction field of a suction means, and is made to serve a double purpose. And since the follower roller 36 is made to approach the drive roller 35 and carries out a nip after this alignment is completed, the drive roller 35 is reversed, a form nose of cam is returned, and a printing starting position is stopped. Here, the horizontal line 38 and the vertical line 39 as a set mark play the role which prevents skew conveyance of a form beforehand by performing alignment at the nose of cam of a form using these.

[0021] The aforementioned feed section 30 consists of gestalten of this operation possible [feeding of a roll sheet 3 other than a single part sheet 40], as shown in drawing 3. And the roll sheet 3 sent out to the form conveyance path is cut for every printing unit by the cutter 41 which only fixed distance separated from the print head 22 to the downstream of a print head 22, and has been arranged at the cartridge 21 in the place of predetermined length. In the case of the gestalt of this operation, the cutter 41 has composition which resists the return spring 43 by the solenoid 42, and is driven from the rear side of a conveyance side to a back side.

[0022] Moreover, of the delivery change lever 26, the delivery stack section 8 is a portion which receives the printed form, and it guides a form [finishing in developing the stack cloth 27 in the front face of a printer at the time of the mark exception of a roll sheet 3] to the main part lower part of a printer, or at the time of printing of rigid pasteboard, it is formed so that it may be made to evacuate to the position (position of drawing 3) which does not become the hindrance of discharge of rigid pasteboard

[0023] Next, based on drawing 1 and drawing 2, an operation of the large-sized printer concerning the form of this operation is explained by making into an example the case where a single part sheet 40 is printed. Since a form nose-of-cam side is firmly held in the state flat in the position with the suction mouth 25 which constitutes the aforementioned suction means in case according to the form of this operation a form conveyance path inserts the nose of cam of a form 40 in a form conveyance path from the slanting upper part, passes the printing area of the printing section 7 and carries out alignment at the nose of cam of a form by the large-sized printer of slanting structure, the nose-of-cam alignment can be performed easily. Although it will bend if the posture of a form is not held especially compulsorily in the case of a single part sheet with the weak waist, and alignment is difficult, since a form with such the weak waist is also held firmly, according to the form of this operation, the alignment can be performed easily.

[0024] Moreover, since that in which the ejection roller 50 arranged in the upstream of a print head 22 is formed possible [the attachment-and-detachment possibility of, i.e., a release,] relatively can perform the aforementioned ejection roller 50 in the state of a release in case it inserts the nose of cam of a form 40 in a form conveyance path from the slanting upper part and passes the printing area of the printing section 7, it tends to insert a form 40. And although it is the case of a single part sheet since the form 40 concerned is held by the suction means (suction mouth 25) in the position after inserting especially, while there is no possibility of falling carelessly from the form conveyance path of slanting structure, it much more becomes easy to carry out alignment at the nose of cam of a form.

[0025] Moreover, attitude control of that to which the lowest style position of the suction field of a suction means serves as the horizontal line 38 for the nose-of-cam alignment of a form 40 is carried out evenly, without coming floating to the tip of a form 40, since the horizontal line 38 used as the criteria of the alignment at the nose of cam of a form has suction capacity, and precise alignment is possible for it. Moreover, that to which the maximum side edge position of the suction field of the aforementioned suction means serves as the vertical line 39 for the lengthwise alignment of a form 40 can perform precise alignment easily by the vertical line 39 concerned about the side of a form 40 as well as the aforementioned horizontal line 38.

[0026] Moreover, by the suction means concerned, when carrying out nose-of-cam alignment of a roll sheet 3, since it is firmly held in the state with a form nose of cam flat in the position, what

the aforementioned feed section 30 consists of possible [feeding of a roll sheet 3 other than a single part sheet 40] can perform the nose-of-cam alignment easily.

[0027] Next, based on drawing 3, the form of other operations of this invention is explained. As for the form of this operation, the aforementioned suction means is formed in back possible [suspension] through roll-sheet covering 28 front face and the upper surface 16 of a main part of the feed section 30 from suction mouth 25 portion in which it was prepared in the single part sheet 51 with a large-sized form conveyance path. That is, it is formed so that the back of a main part can also be used as a form conveyance path from the upper surface 16 of a main part. And it is constituted so that this nose-of-cam alignment of the single part sheet 51 large-sized in the state of suspension can be performed.

[0028] The large-sized form 51 concerned can be set easily [a printer] by setting the back end side of this form in the state of suspension using the upper surface 16 of a printer main part to the back, although it cannot set to the front-face side of a printer as it is like the form 40 of the size shown in drawing 1 when printing to the quite large-sized single part sheet 51, as shown in drawing 3 according to the form of this operation. And when carrying out alignment at the nose of cam of a form in the state of the set and it is going to return a form nose of cam to the upstream of the conveyance direction for a while, since [by which the aforementioned suspension portion (back end side of 51 of a form) is based on the self-weight] it pulls and the force is done, it can return by the light force. Moreover, since the total weight of a form 51 is not moves at a stretch by operation of the aforementioned suspension portion at a downstream when moving a form nose of cam to a downstream conversely, it can be made to be able to move easily by the light force, it can have, and alignment can be performed easily.

[0029]

[Effect of the Invention] According to this invention, when a form conveyance path prints in a form by the large-sized printer of slanting structure, alignment at the required nose of cam of a form can be performed easily. That is, since a form nose-of-cam side is firmly held in the state flat in the position by the suction means concerning this invention in case a form conveyance path inserts the nose of cam of a form in a form conveyance path from the slanting upper part, passes the printing area of the printing section and carries out alignment at the nose of cam of a form by the large-sized printer of slanting structure, the nose-of-cam alignment can be performed easily. Although it will bend if the posture of a form is not held especially compulsorily in the case of a single part sheet with the weak waist etc., and alignment is difficult, since a form with such the weak waist is also held firmly, according to the invention in this application, the alignment can be performed easily.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the cross section having shown the structure of the conveyance side of the printing section of the large-sized printer concerning the form of 1 operation of this invention.

[Drawing 2] It is the outline front view of the large-sized printer concerning this invention.

[Drawing 3] It is outline drawing of longitudinal section of the large-sized printer concerning this invention.

[Description of Notations]

- 3 Roll Sheet
- 7 Printing Section
- 8 Delivery Stack Section
- 16 Upper Surface of Main Part
- 22 Print Head (Printing Section)
- 23 Delivery Guide
- 24 Suction Fan (Suction Means)
- 25 Suction Mouth (Suction Means)
- 28 Roll-Sheet Covering
- 30 Feed Section
- 31 Feed Guide
- 33 Platen (Printing Section)
- 35 Drive Roller
- 36 Follower Roller
- 38 Horizontal Line (Set Mark)
- 39 Vertical Line (Set Mark)
- 40 Single Part Sheet
- 50 Ejection Roller
- 51 Large-sized Single Part Sheet

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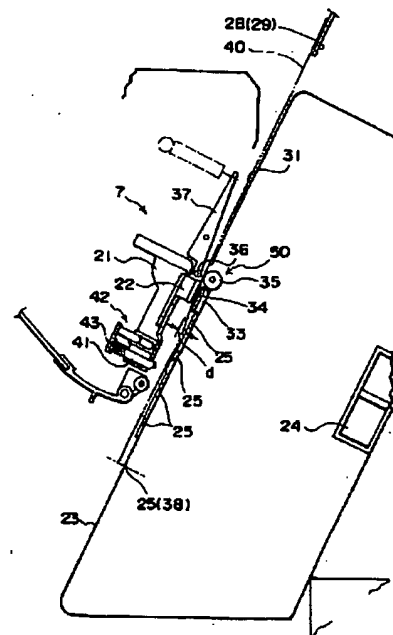
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(54)【発明の名称】 大型プリンタ

(57)【要約】

【課題】 用紙搬送経路が斜め構造の大型プリンタで、用紙40に印刷する場合に必要な用紙先端の位置合わせを容易に行える大型プリンタを提供すること。

【解決手段】 給紙部30、印刷部7及び排紙スタック部8が上、中及び下の位置関係に配置され、前記給紙部から前記印刷部を経て前記排紙スタック部に向かう用紙搬送経路が斜め上方の奥側から斜め下方の手前側にほぼ真っ直ぐに形成されている大型プリンタにおいて、前記用紙搬送経路の印字ヘッド22の下流側における用紙搬送面に、用紙を背面から吸引して用紙が搬送面から離れるのを抑制する吸引手段25を設けたこと。用紙の先端を斜め構造の用紙搬送経路に斜め上方から差し込んで印刷部の印字領域を通過させて用紙先端の位置合わせをする際に、吸引手段25により用紙先端側がその位置に平坦な状態でしっかりと保持されるため、その先端位置合わせを容易に行うことができる。



【特許請求の範囲】

【請求項1】 給紙部、印刷部及び排紙スタック部が上、中及び下の位置関係に配置され、前記給紙部から前記印刷部を経て前記排紙スタック部に向かう用紙搬送経路が斜め上方の奥側から斜め下方の手前側にほぼ真直ぐに形成されている大型プリンタにおいて、前記用紙搬送経路の印字ヘッドの下流側における用紙搬送面に、用紙を背面から吸引して用紙が搬送面から離れるのを抑制する吸引手段を設けたことを特徴とする大型プリンタ。

【請求項2】 請求項1において、前記用紙搬送経路の印字ヘッドの上流側に配設される紙送りローラは、駆動ローラに対して従動ローラが相対的に接離可能に形成され、用紙先端の位置合わせは前記両ローラは離れた状態で行われるように形成されていることを特徴とする大型プリンタ。

【請求項3】 請求項1又は2において、吸引手段は小さな吸引口を単位としてそれが並べられて構成されていることを特徴とする大型プリンタ。

【請求項4】 請求項1～3のいずれかにおいて、前記吸引手段の吸引領域の最下流位置は用紙の先端位置合わせ用の横ラインを兼ねていることを特徴とする大型プリンタ。

【請求項5】 請求項4において、前記吸引手段の吸引領域の最側端位置は用紙の縦方向の位置合わせ用の縦ラインを兼ねていることを特徴とする大型プリンタ。

【請求項6】 請求項1～5のいずれかにおいて、前記用紙搬送経路は、大型の単票用紙を前記吸引手段が設けられた部分から前記給紙部の前面及び上面を経て後方に垂下可能に形成され、この垂下状態で大型の単票用紙の先端位置合わせが行えるように構成されていることを特徴とする大型プリンタ。

【請求項7】 請求項1～6のいずれかにおいて、前記給紙部は、単票用紙の他にロール紙も給紙可能に構成されていることを特徴とする大型プリンタ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、ロール紙を使用する大型プリンタ、特に印刷部における排紙ローラをなくすように構成した大型プリンタに関するものである。

【0002】

【従来の技術】ロール紙を使用する大型プリンタ、特に幅420mm以上の大型の用紙に印刷するための大型プリンタとして、給紙部、印刷部及び排紙スタック部が上、中及び下の位置関係に配置され、前記給紙部から前記印刷部を経て前記排紙スタック部に向かう用紙搬送経路が斜め上方の奥側から斜め下方の手前側にほぼ真直ぐに形成されているものを本願出願人は、先に出願した。

【0003】

【発明が解決しようとする課題】用紙搬送経路が上記斜め構造の大型プリンタでは、上記のような大型の用紙に印刷する場合に、まず、その用紙の先端を用紙搬送経路に斜め上方から差し込んで印刷部の印字領域を通過させて用紙先端の位置合わせをする必要がある。

【0004】本発明の課題は、用紙搬送経路が斜め構造の大型プリンタで、用紙に印刷する場合に必要な用紙先端の位置合わせを容易に行える大型プリンタを提供することにある。

10 【0005】

【課題を解決するための手段】上記課題を達成するため、本願請求項1に記載の発明は、給紙部、印刷部及び排紙スタック部が上、中及び下の位置関係に配置され、前記給紙部から前記印刷部を経て前記排紙スタック部に向かう用紙搬送経路が斜め上方の奥側から斜め下方の手前側にほぼ真直ぐに形成されている大型プリンタにおいて、前記用紙搬送経路の印字ヘッドの下流側における用紙搬送面に、用紙を背面から吸引して用紙が搬送面から離れるのを抑制する吸引手段を設けたことを特徴とするものである。

【0006】本発明によれば、用紙搬送経路が斜め構造の大型プリンタで、用紙の先端を用紙搬送経路に斜め上方から差し込んで印刷部の印字領域を通過させて用紙先端の位置合わせをする際に、前記吸引手段により用紙先端側がその位置に平坦な状態でしっかりと保持されるため、その先端位置合わせを容易に行うことができる。特に、腰の弱い用紙（特に腰の弱い単票用紙）の場合には強制的に用紙の姿勢を保持しないと撓んでしまって位置合わせが難しいが、本願発明によれば、このような腰の弱い用紙でもしっかりと保持されるため、その位置合わせが簡単に行える。

【0007】また、本願請求項2に記載の発明は、請求項1に記載された大型プリンタにおいて、前記用紙搬送経路の印字ヘッドの上流側に配設される紙送りローラは、駆動ローラに対して従動ローラが相対的に接離可能、すなわちリリース可能に形成され、用紙先端の位置合わせは前記両ローラは離れたリリース状態で行われるように形成されていることを特徴とするものである。

【0008】本発明によれば、用紙の先端を用紙搬送経路に斜め上方から差し込んで印刷部の印字領域を通過させる際に、前記紙送りローラをリリース状態で行えるため、用紙を差し込みやすいと共に、差し込んだ後は当該用紙は前記吸引手段によりその位置に保持されるため、特に単票用紙の場合であるが、斜め構造の用紙搬送経路から不用意に落下する虞がない。更に、用紙先端の位置合わせも一層し易くなる。

【0009】また、本願請求項3に記載の発明は、請求項1又は2に記載された大型プリンタにおいて、吸引手段は小さな吸引口を単位としてそれが並べられて構成されていることを特徴とするものである。本発明によれ

ば、構造簡単にして吸引手段の吸引部を形成することができる。

【0010】また、本願請求項4に記載の発明は、請求項1～3のいずれかに記載された大型プリンタにおいて、前記吸引手段の吸引領域の最下流位置は用紙の先端位置合わせ用の横ラインを兼ねていることを特徴とするものである。本発明によれば、用紙先端の位置合わせの基準となる横ラインが吸引能力を有するため、用紙の最先端まで浮き上がること無く平坦に姿勢制御され、精密な位置合わせが可能である。

【0011】また、本願請求項5に記載の発明は、請求項4に記載された大型プリンタにおいて、前記吸引手段の吸引領域の最側端位置は用紙の縦方向の位置合わせ用の縦ラインを兼ねていることを特徴とするものである。本発明によれば、用紙のサイドについても当該縦ラインにより前記横ラインと同様に精密な位置合わせを容易に行える。

【0012】また、本願請求項6に記載の発明は、請求項1～5のいずれかに記載された大型プリンタにおいて、前記用紙搬送経路は、大型の単票用紙を前記吸引手段が設けられた部分から前記給紙部の前面及び上面を経て後方に垂下可能に形成され、この垂下状態で大型の単票用紙の先端位置合わせが行えるように構成されていることを特徴とするものである。

【0013】本発明によれば、かなり大型の単票用紙に印刷する場合に、その用紙を先ずプリンタにセットしなければならないが、そのセット状態を前記垂下状態にすることで、簡単にセットすることができる。しかも、そのセット状態で用紙先端の位置合わせをするときに、用紙先端を上流に少し戻そうとする場合には、前記垂下部分がその自重に基づく引っ張り力を及ぼすため、軽い力で戻すことができる。また、逆に用紙先端を下流側に移動させる場合も、前記垂下部分の作用により一気に用紙の全重量が下流側に移動することにはならないので、軽い力で簡単に移動させることができ、もって位置合わせを容易に行うことができる。

【0014】また、本願請求項7に記載の発明は、請求項1～6のいずれかに記載された大型プリンタにおいて、前記給紙部は、単票用紙の他にロール紙も給紙可能に構成されていることを特徴とするものである。本発明によれば、ロール紙の先端位置合わせをする場合も、当該吸引手段により、用紙先端がその位置に平坦な状態でしっかりと保持されるため、その先端位置合わせを容易に行うことができる。

【0015】

【発明の実施の形態】以下、本願発明の実施の形態を図面に基いて説明する。図1は本発明の一実施の形態に係る大型プリンタの印刷部、正確にはその用紙搬送経路中に在る印字部の前後における搬送面の構造を示した図であり、図2は当該大型プリンタの概略正面図であり、

図3は当該大型プリンタの概略縦断面図である。

【0016】本実施の形態に係る大型プリンタは、図3に示した如く、給紙部30、印刷部7及び排紙スタック部8が上、中及び下の位置関係に配置されている。そして、前記給紙部30から前記印刷部7を経て前記排紙スタック部8に向かう用紙搬送経路が斜め上方の奥側から斜め下方の手前側にはほぼ真直ぐに形成されている。当該給紙部30は、ロール紙3と大型の剛性厚紙を含む単票用紙40(図1)の両方を給紙できるものである。具体的には、ロール紙3は、2本のスピンドル4、5により給紙部30に交換時に取り外しできるように取り付けられており、また単票用紙40は、図1に示した如く、給紙部30の前面側の斜面を利用して載置することによりセットできるように構成されている。本実施の形態では、装着されたロール紙3の前面に設けられるロール紙カバー28が、前記単票用紙40のセット状態での支え部29を兼ねるように形成されている。

【0017】印刷部7は、インクジェット式の印字ヘッド22及びこれに対向して配置されたブラテン33(図1)とから成る印字部を有すると共に、その印字ヘッド22の上流側における用紙搬送面として作用する平坦な給紙ガイド31と、下流側における用紙搬送面として作用する平坦な排紙ガイド23とを有する。本実施の形態では、この給紙ガイド31による印字ヘッド22の上流側における用紙搬送面と、排紙ガイド23による印字ヘッド22の下流側における用紙搬送面とは段差d(図1参照)を持って設けられ、印字ヘッド7の下流側における用紙搬送面の方が奥側に下った段差構造となっている。

【0018】図1に基づいて、上記印刷部7の構造を更に詳しく説明する。上記給紙ガイド31による印字ヘッド22の上流側における用紙搬送面と、排紙ガイド23による印字ヘッド22の下流側における用紙搬送面とは、ブラテン33を境として、段差dが付けられている。すなわち、このブラテン33の用紙搬送面は、ブラテン33の上面に突設された複数のリブ34により決定されており、給紙ガイド31のレベルは、このリブ34とほぼ同一に、また排紙ガイド23のレベルは、これより段差dだけ奥側に下げられている。

【0019】そして、印字ヘッド22の下流側における排紙ガイド23には、吸引室(図示せず)に連通された複数の小孔から成る吸引口25が設けられ、吸引ファン24による吸引力により該吸引口25を通して用紙40を背面側から吸引して、用紙の浮き上がりを抑え、平坦な状態にしてしっかりと用紙搬送面に保持し得るようになっている。この吸引口25は、横方向に並べて形成され、本実施の形態では所定間隔をあけて横に5列設けられている。該吸引口25は上記吸引室および吸引ファン24と共に吸引手段を構成するものである。

【0020】図1に示したように、印字ヘッド22とブ

ラテン33の対のすぐ上流側には、給紙ローラ50が配置され、これは駆動ローラ35と従動ローラ36の対から成ると共に、従動ローラ36が回動レバー37により接離可能に設けられている。この接離機構を必要とするのは、用紙を位置合わせする際に、従動ローラ36を給紙ローラ35から切り離して(リリース状態)ここを通過し易くするためである。即ち、用紙の先端位置合わせは、用紙40の先端を用紙搬送経路に斜め上方から差し込んで印刷部7の印字領域(印字ヘッド22の下)を通過させ、該用紙先端を排紙ガイド23上のセットマークとしての横ライン38により合わせて行われるように形成されている。ここで、横ライン38は、吸引手段を構成する吸引口25の列の最下流位置のもので兼用されている(図1と図2参照)。更に、用紙40の縦方向の位置合わせ用の縦ライン39が、図2に示したように、吸引手段の吸引領域の最側端位置(本実施の形態では右側端)のもので兼用されている。そして、この位置合わせが終了した後、従動ローラ36を駆動ローラ35に接近させてニップさせてから、駆動ローラ35を逆転させて用紙先端を戻し、印刷開始位置に停止させる。ここで、

【0021】本実施の形態では、前記給紙部30は、図3に示したように単票用紙40の他にロール紙3も給紙可能に構成されている。そして、用紙搬送経路に送り出されたロール紙3は、印字ヘッド22の下流側に印字ヘッド22から一定距離だけ離れてカートリッジ21に配置されたカッター41により、印刷単位毎に所定長さの所で切断されるようになっていて、本実施の形態の場合、カッター41はソレノイド42により復帰バネ43に抗して搬送面の手前側から奥側に駆動される構成となっている。

【0022】また、排紙スタック部8は、印刷された用紙を受ける部分であり、排紙切換レバー26によって、ロール紙3の印刷時にはスタック布27をプリンタ前面に展開したり、印刷済みの用紙をプリンタ本体下部に誘導したり、或いは、剛性厚紙の印刷時には剛性厚紙の排出の妨げにならない位置(図3の位置)に退避させるように形成されている。

【0023】次に、図1及び図2に基づいて、単票用紙40を印刷する場合を例として、本実施の形態に係る大型プリンタの作用を説明する。本実施の形態によれば、用紙搬送経路が斜め構造の大型プリンタで、用紙40の先端を用紙搬送経路に斜め上方から差し込んで印刷部7の印字領域を通過させて用紙先端の位置合わせをする際に、前記吸引手段を構成する吸引口25により用紙先端側がその位置に平坦な状態でしっかりと保持されるため、その先端位置合わせを容易に行うことができる。特

に、腰の弱い単票用紙の場合には強制的に用紙の姿勢を保持しないと撓んでしまって位置合わせが難しいが、本実施の形態によれば、このような腰の弱い用紙でもしっかりと保持されるため、その位置合わせが簡単に行える。

【0024】また、印字ヘッド22の上流側に配設される紙送りローラ50が相対的に接離可能、すなわちリリース可能に形成されているものは、用紙40の先端を用紙搬送経路に斜め上方から差し込んで印刷部7の印字領域を通過させる際に、前記紙送りローラ50をリリース状態で行えるため、用紙40を差し込みやすい。そして、差し込んだ後は当該用紙40は吸引手段(吸引口25)によりその位置に保持されるため、特に単票用紙の場合であるが、斜め構造の用紙搬送経路から不用意に落下する虞がないと共に、用紙先端の位置合わせも一層し易くなる。

【0025】また、吸引手段の吸引領域の最下流位置が用紙40の先端位置合わせ用の横ライン38を兼ねているものは、用紙先端の位置合わせの基準となる横ライン38が吸引能力を有しているため、用紙40の最先端まで浮き上がることも無く平坦に姿勢制御され、精密な位置合わせが可能である。また、前記吸引手段の吸引領域の最側端位置が用紙40の縦方向の位置合わせ用の縦ライン39を兼ねているものは、用紙40のサイドについても当該縦ライン39により前記横ライン38と同様に精密な位置合わせを容易に行える。

【0026】また、前記給紙部30が単票用紙40の他にロール紙3も給紙可能に構成されているものは、ロール紙3の先端位置合わせをする場合も、当該吸引手段により、用紙先端がその位置に平坦な状態でしっかりと保持されるため、その先端位置合わせを容易に行うことができる。

【0027】次に、図3に基づいて、本発明の他の実施の形態を説明する。本実施の形態は、用紙搬送経路は、大型の単票用紙51を前記吸引手段が設けられた吸引口25部分から給紙部30のロール紙カバー28前面及び本体上面16を経て後方に垂下可能に形成されている。即ち本体上面16から本体の後方も用紙搬送経路として利用できるように形成されている。そして、この垂下状態で大型の単票用紙51の先端位置合わせが行えるように構成されている。

【0028】この実施の形態によれば、図3に示した如く、かなり大型の単票用紙51に印刷する場合に、図1に示した大きさの用紙40のようにプリンタ前面側にそのままセットすることができないが、プリンタ本体上面16からその後方を利用して該用紙の後端側を垂下状態でセットすることで、当該大型の用紙51をプリンタに簡単にセットすることができる。しかも、そのセット状態で用紙先端の位置合わせをするときに、用紙先端を搬送方向の上流側に少し戻そうとする場合には、前記垂下

部分(用紙の51の後端側)がその自重に基づく引っ張り力を及ぼすため、軽い力で戻すことができる。また、逆に用紙先端を下流側に移動させる場合も、前記垂下部分の作用により一気に用紙51の全重量が下流側に移動することにはならないので、軽い力で簡単に移動させることができ、もって位置合わせを容易に行うことができる。

【0029】

【発明の効果】本発明によれば、用紙搬送経路が斜め構造の大型プリンタで、用紙に印刷する場合に必要な用紙先端の位置合わせを容易に行える。すなわち、用紙搬送経路が斜め構造の大型プリンタで、用紙の先端を用紙搬送経路に斜め上方から差し込んで印刷部の印字領域を通過させて用紙先端の位置合わせをする際に、本発明に係る吸引手段により用紙先端側がその位置に平坦な状態でしっかりと保持されるため、その先端位置合わせを容易に行うことができる。特に、腰の弱い単票用紙等の場合には強制的に用紙の姿勢を保持しないと撓んでしまって位置合わせが難しいが、本願発明によれば、このような腰の弱い用紙でもしっかりと保持されるため、その位置合わせが簡単に行える。

【図面の簡単な説明】

【図1】本発明の一実施の形態に係る大型プリンタの印刷部の搬送面の構造を示した断面図である。

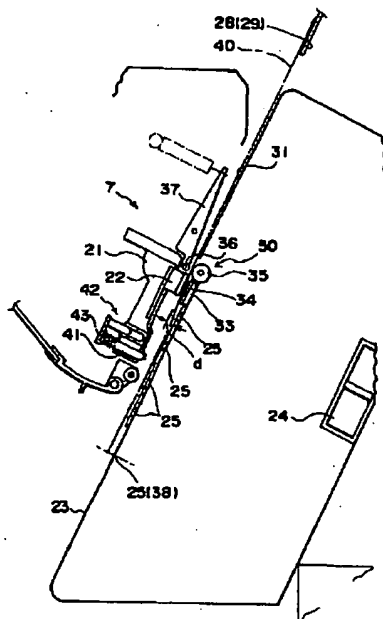
*【図2】本発明に係る大型プリンタの概略正面図である。

【図3】本発明に係る大型プリンタの概略縦断面図である。

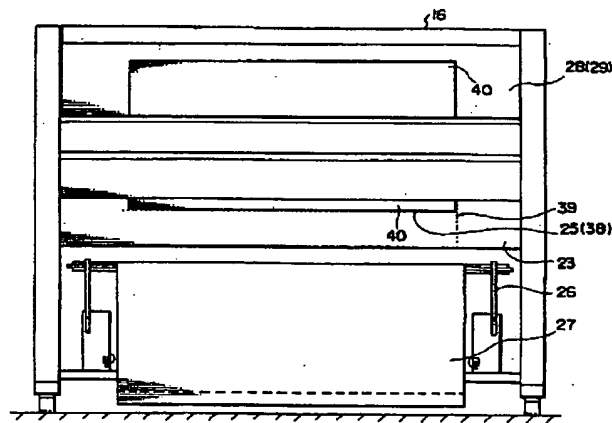
【符号の説明】

- 3 ロール紙
- 7 印刷部
- 8 排紙スタック部
- 16 本体上面
- 22 印字ヘッド(印字部)
- 23 排紙ガイド
- 24 吸引ファン(吸引手段)
- 25 吸引口(吸引手段)
- 28 ロール紙カバー
- 30 給紙部
- 31 給紙ガイド
- 33 プラテン(印字部)
- 35 駆動ローラ
- 36 従動ローラ
- 38 横ライン(セットマーク)
- 39 縦ライン(セットマーク)
- 40 単票用紙
- 50 紙送りローラ
- 51 大型の単票用紙

【図1】



【図2】



(6)

特開2000-158735

【図3】

